

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the present application:

Claims 1-35 (canceled).

36. (Withdrawn) A method of monitoring renal tubular epithelial differentiation comprising:
  - a) isolating at least one cell
  - b) placing said cell into a rotating wall vessel containing a cell culture comprising culture media and culture matrix; and
  - c) monitoring expression of greater than one gene in an array, wherein said expression of said genes is indicative of differentiated renal tubular epithelial cells.
37. (Withdrawn) The method of claim 36, wherein each gene in said genes is selected from the group consisting of 1- $\alpha$ -hydroxylase, megalin, cubulin, erythropoietin, manganese super oxide dysmutase, interleukin-1 $\beta$ , a GABA transporter gene,  $\beta$  actin, villin, extracellular calcium sensing receptor, ICAM, VCAM, and  $\gamma$ -glutamyl transferase.
38. (Withdrawn) The method of claim 36, wherein said expression of said genes is increased.
39. (Withdrawn) The method of claim 38, wherein each gene in said genes is selected from the group consisting of 1- $\alpha$ -hydroxylase, megalin, cubulin, erythropoietin, manganese super oxide dysmutase, interleukin-1 $\beta$ , a GABA transporter gene,  $\beta$  actin, villin, extracellular calcium sensing receptor, ICAM, VCAM, and  $\gamma$ -glutamyl transferase.
40. (Withdrawn) The method of claim 36, wherein said expression of said genes is decreased.

41. (Withdrawn) The method of claim 40, wherein each gene in said genes is selected from the group consisting of 1- $\alpha$ -hydroxylase, megalin, cubulin, erythropoietin, manganese super oxide dysmutase, interleukin-1 $\beta$ , a GABA transporter gene,  $\beta$  actin, villin, extracellular calcium sensing receptor, ICAM, VCAM, and  $\gamma$ -glutamyl transferase.
42. (Currently Amended) A method of producing ~~active renal epithelial~~ cells exhibiting 1- $\alpha$ -hydroxylase activity comprising:  
isolating human embryonic renal stem cells; and  
culturing said renal ~~stem~~ cells in a rotating wall vessel containing a ~~cell culture~~ comprising culture media and cell culture matrix, wherein gravity is ~~substantially~~ balanced in said rotating wall vessel by ~~equal and opposite~~ oppositely directed physical forces.
43. (Canceled)
44. (Withdrawn) A method of producing active 1,25-dihydroxy vitamin D3 comprising:  
a) isolating at least one cell;  
b) placing said cell into a rotating wall vessel containing a cell culture comprising culture media and culture matrix; and  
c) inducing 1,25-dihydroxy vitamin D3 production.
45. (Currently Amended) The method of producing ~~active renal epithelial~~ cells of claim 42 wherein said cell culture matrix comprises micro-carrier beads.
46. (Currently Amended) The method of producing ~~active renal epithelial~~ cells of claim 42 wherein said ~~active renal epithelial~~ cells are suitable for therapeutic use.
47. (Currently Amended) The method of producing ~~active renal epithelial~~ cells of claim 42 wherein said ~~active renal epithelial~~ cells are suitable for diagnostic use.
48. (Canceled)
49. (Currently Amended) The method of producing ~~active renal epithelial~~ cells of claim 42 wherein said physical forces comprise sedimentational shear stress.

50. (Currently Amended) The method of producing ~~active~~ renal ~~epithelial~~ cells of claim 42 wherein said physical forces comprise sedimentational shear stress and centrifugal forces.
51. (Currently Amended) The method of producing ~~active~~ renal ~~epithelial~~ cells of claim 42 wherein said physical forces comprise viscosity and ~~coriolis~~ Coriolis forces.